Sonic Heat Transport and Water Density Alternation for Enhanced Evaporation in Steam Engines

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Introduction

As acoustic energy can be used to control the motion of heat through a solid or liquid body and as acoustic waves create alternating patterns of increased and decreased density, it makes sense to employ acoustic generators at the bottom of water wells heated for steam generation.

Abstract

I propose that the efficiency of steam generation in nuclear and other reactor types can be enhanced further, especially when coupled with other enhancement mechanisms such as the introduction of aerated water to the evaporative surface through a sprinkler system as described in my other publication of this day, by the introduction of sonic energy from sonic emitters at the bottom of the heated water reservoirs in such reactors in which the sonic energy is directed from the bottom of the pools toward the surface.

The simple addition of structured acoustic energy, particularly at a frequency which complements evaporation, would certainly enhance the efficiency of steam engines. The goal of the generation of this energy would be to transiently reduce the density of water near the evaporative surface (with it necessarily increasing alternatingly) in order to foster greater evaporation resulting from the decreased density of the water relative to the air. Decreased density of the water would have an effect analogous to the effect of placing water in an atmospheric vacuum, which forces boiling even at room temperature.

The act of boiling water generates randomized acoustic energy to a body of water which is counterproductive in the context of this endeavor. However, if we introduce our own artificial acoustic energy to a body of boiling water, the randomly generated acoustic energy associated with this can be redirected and incorporated into the structured energy so that it arrives at the surface of the water from below in a unified manner.

Not only would the acoustic energy foster heat transport and not only would it generate transiently mitigated liquid density at the evaporative surface, it could increase the surface area of the evaporative surface which would only further serve to accelerate the conversion of water into steam.

Conclusion

This author estimates that the introduction of pre-aerated water to the surface of heated water through misters would enhance efficiency of steam engines by 10% and that this acoustic system would add another 5% to the overall level

of efficiency, taking the industry-standard in nuclear power from about 30% efficiency to 45% efficiency.